Docket No. AUS920030853US1

METHOD AND APPARATUS FOR WIRELESS ORDERING FROM A RESTAURANT

BACKGROUND OF THE INVENTION

1. Technical Field:

The present invention relates generally to an improved data processing system and in particular to a method and apparatus for processing data. Still more particularly, the present invention relates to a method, apparatus, and computer instructions for wireless ordering from a restaurant.

2. Description of Related Art:

In today's times, most people eat out at restaurants on a regular basis. In fact, many people go out to eat one or more times each week. When going to popular restaurants, a customer most often waits in line for a table. This wait may vary from a few minutes to a few hours depending on the popularity of the restaurant. In some cases, customers will enter the restaurant, be seated at a table and order food. In other cases, customers may order food from a fast food restaurant, through a drive-through lane, or order food to go from a more traditional sit-down restaurant. This type of ordering usually occurs when a customer is in a hurry and does not have time to sit down and eat in a more traditional restaurant setting.

When ordering food to go or for pickup, the customer may often have to wait longer than desired. For example,

the customer first waits in line to place an order and then waits for the order to be prepared. This type of waiting is often a problem when time is limited, such as during lunch time. Further, many customers may order the same food frequently. Currently no mechanism is present for the customer to just say "give me my usual order." Additionally, with drive-through lanes no convenient method is currently present to pay for an order. A customer typically passes money through a vehicle window to the cashier. Depending on the location of the vehicle and the cashier's window, some customers may have to stretch to reach the window or in some cases, the customer may even have to open the door of the vehicle to pass the money to the cashier. In this exchange, the money may be dropped.

These different drawbacks can make ordering food a time consuming and frustrating experience for a customer. Therefore, it would be advantageous to have an improved method, apparatus, and computer instructions for placing orders for food.

SUMMARY OF THE INVENTION

The present invention provides a method, apparatus, and computer instructions for a method for ordering food from a restaurant. A hot spot location is provided for the restaurant. The hot spot provides for wireless communications with a wireless device for a user. In response to detecting the wireless device within the hot spot location, a determination is made as to whether user preferences are stored within the device. In response to user preferences being present, a menu is generated based on the user preferences. This menu is sent to the wireless device for use in placing an order.

BRIEF DESCRIPTION OF THE DRAWINGS

The novel features believed characteristic of the invention are set forth in the appended claims. The invention itself, however, as well as a preferred mode of use, further objectives and advantages thereof, will best be understood by reference to the following detailed description of an illustrative embodiment when read in conjunction with the accompanying drawings, wherein:

Figure 1 is a network data processing system in which the present invention is implemented;

Figure 2 is a block diagram of a data processing system that may be implemented as a server in accordance with a preferred embodiment of the present invention;

Figure 3 is a diagram of a wireless device in the form of a personal digital assistant (PDA) in accordance with a preferred embodiment of the present invention;

Figure 4 is a diagram illustrating components used in placing orders through wireless hot spot locations in accordance with the preferred embodiment of the present invention;

Figure 5 is a flowchart of a process for ordering food in a restaurant using a wireless client in accordance with a preferred embodiment of the present invention;

Figure 6 is a flowchart of a process for ordering food using a wireless client in accordance with a preferred embodiment of the present invention; and

Figure 7 is a flowchart of a process for generating menus from user preferences in accordance with a preferred embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference now to the figures and in particular with reference to **Figure 1**, a network data processing system is depicted in which the present invention is implemented. Network data processing system **100** includes network **102**, which is the medium used to provide communications links between various devices and computers connected together within network data processing system **100**. Network **102** may include connections, such as wire, wireless communications links, or fiber optic cable.

In the depicted example, server **104** is connected to network **102**. Further, clients **106** and **108** are connected to network **102**. In the illustrative example, these two clients are connected through wireless communications links and are wireless devices. In particular, clients **106** and **108** are personal digital assistants (PDA). Server **104** in this example may provide data, such as boot files, operating system images, applications, web pages, and other information to clients **106** and **108**. Network data processing system **100** may include additional servers, clients, and other devices not shown. For example, other devices may include routers, switches, or wireless access points to provide for the routing and transmission of data within network **102**.

In the depicted example, network data processing system **100** is the Internet with network **102** representing a world wide collection of networks and gateways that use

the transmission control protocol/internet protocol (TCP/IP) suite of protocols to communicate with one another. Of course, network data processing system **100** also may be implemented as a number of different types of networks, such as, for example, an intranet, a local area network (LAN), or a wide area network (WAN). Network data processing system **100** in **Figure 1** is intended as an illustrative embodiment and not as an architectural limitation for the present invention.

Within network **102**, hot spots may be provided through various wireless access points to generate hot spot locations. In this manner, clients **106** and **108** may access network **102** when they are within a hot spot location. In these examples, a hot spot location is a location in which a wireless device is in proximity to a wireless access point such that communication or exchange of data may be made with that wireless access point. The present invention in the illustrative embodiments allows for orders to be generated through wireless devices, such as clients **106** and **108** when these clients are within selected hot spot locations. These orders may be made through communications with the server, such as server **104**, which is used by a business to obtain order information using the mechanism of the present invention in the illustrative embodiments.

Referring to **Figure 2**, a block diagram of a data processing system that may be implemented as a server, such as server **104** in **Figure 1**, is depicted in accordance with a preferred embodiment of the present invention. Data processing system **200** may be a symmetric

multiprocessor (SMP) system including a plurality of processors **202** and **204** connected to system bus **206**. Alternatively, a single processor system may be employed. Also connected to system bus **206** is memory controller/cache **208**, which provides an interface to local memory **209**. I/O bus bridge **210** is connected to system bus **206** and provides an interface to I/O bus **212**. Memory controller/cache **208** and I/O bus bridge **210** may be integrated as depicted.

Peripheral component interconnect (PCI) bus bridge **214** connected to I/O bus **212** provides an interface to PCI local bus **216**. A number of modems may be connected to PCI local bus **216**. Typical PCI bus implementations will support four PCI expansion slots or add-in connectors. Communications links to clients **106** and **108** in **Figure 1** may be provided through modem **218** and network adapter **220** connected to PCI local bus **216** through add-in connectors.

Additional PCI bus bridges **222** and **224** provide interfaces for additional PCI local buses **226** and **228**, from which additional modems or network adapters may be supported. In this manner, data processing system **200** allows connections to multiple network computers. A memory-mapped graphics adapter **230** and hard disk **232** may also be connected to I/O bus **212** as depicted, either directly or indirectly.

Those of ordinary skill in the art will appreciate that the hardware depicted in **Figure 2** may vary. For example, other peripheral devices, such as optical disk drives and the like, also may be used in addition to or in place of the hardware depicted. The depicted example is

not meant to imply architectural limitations with respect to the present invention.

The data processing system depicted in **Figure 2** may be, for example, an IBM eServer pSeries system, a product of International Business Machines Corporation in Armonk, New York, running the Advanced Interactive Executive (AIX) operating system or Linux operating system.

Turning now to **Figure 3**, a diagram of a wireless device in the form of a personal digital assistant (PDA) is shown in accordance with a preferred embodiment of the present invention. PDA **300** is an example of a PDA, such as wireless client **106** or wireless client **108** in **Figure 1**. PDA **300** includes processor **302** and main memory **304** connected to system bus **306**. Further, PDA **300** also includes audio adapter **308**, graphics adapter **310**, touch screen/stylus adapter **312**, transceiver **314**, and storage **316** connected to system bus **306**.

Audio adapter **308** and graphics adapter **310** provide an interface for the user to hear and see information. Touch screen/stylus adapter **312** allows the user to interact with PDA **300**. This particular component allows the user to use a stylus to input data into a touch screen display on PDA **300**.

Processor **302** executes instructions stored in main memory **304** to provide the process and function of the present invention. Storage **316** provides for additional storage of data and applications. Storage **316** may take various forms, such as, for example, a flash memory. This flash memory in the illustrative embodiments may be, for example, a Memory Stick, a secured digital (SD) card,

a CompactFlash card, or SmartMedia card. Memory Stick is a trademark of Sony Corporation. CompactFlash is a trademark of the CompactFlash association, and SmartMedia is a trademark of Toshiba Corporation. Transceiver **314** provides for sending and receiving data through a wireless communications link.

An operating system runs on processor **302** and is used to coordinate and provide for control of various components within PDA **300** in **Figure 3**. The operating system may be, for example, a commercially available operating system, such as Windows Mobile, which is available from Microsoft Corporation. Instructions for the operating system and applications or programs are located on storage **316** in these examples. These instructions may be loaded into main memory **304** for execution by processor **302**.

Those of ordinary skill in the art will appreciate that the hardware in **Figure 3** may vary depending on the implementation. Other internal hardware or peripheral devices, such as additional storage in the form of flash read only memory (ROM) or equivalent non-volatile memory may be used in addition to or in place of the hardware illustrated in **Figure 3**.

Depending on the particular implementation, other types of wireless devices may be used. For example, a wireless digital phone, laptop computer, or a tablet computer may be used as a client to order food from a business.

Turning next to **Figure 4**, a diagram illustrating components used in placing orders through wireless hot

spot locations is depicted in accordance with the preferred embodiment of the present invention. In this example, hot spot location **400** is provided through wireless access point (WAP) **402** and wireless access point **404**. In this illustrative example, hot spot location **400** is the interior of a restaurant. Another hot spot location, hot spot location **406** is provided outside of the restaurant through wireless access point **408**. Hot spot location **406** may be provided for a pick-up or drive-through window for the restaurant. Further, depending on the particular implementation other hot spot locations may be employed. For example, a hot spot location may be placed down the street from the restaurant to allow for ordering before the customer reaches the restaurant. This type of configuration allows for additional time to prepare the order before the customer reaches the pick-up or drive-through window.

These wireless access points are in communication with server process **410**. Server process **410** may be executing on a server, such as data processing system **200** in **Figure 2**. This server process may be located on the premises of the restaurant or in a remote location, depending on the implementation. These different hot spot locations may be publicized through signs, other literature, or advertising. While a wireless client is in one of these hot spot locations, the user of the device is able to contact only the restaurant in these illustrative examples.

In this example, wireless client **412** is said to be within hot spot location **400** when client **412** is able to

establish a communications link with wireless access point **402** or wireless access point **404**, which form hot spot location **400** in these examples. In this manner, wireless client **412** is able to exchange data with server process **410**. This information may include for example, preferences **414**, which are located within wireless client **412**.

Wireless client **416** is in hot spot location **406** in this example. In a similar manner, wireless client **416** is able to exchange data with server process **410**. In these examples, the data includes preferences **418** stored within wireless client **416**.

In these examples, wireless clients **412** and **416** are PDAs, such as PDA **300** in **Figure 3**. The preferences stored in these wireless clients include order information and charge information. The order information in preferences **414** and **418** may include preselected orders that a user makes on a regular basis. Alternatively, this order information may be generated by the user in a dialogue with server process **410**. In this case, server process **410** may send information, such as a menu to allow the user to generate an order to be stored in the preferences.

Further, preferences **414** and **418** include information that may be used to generate a menu based on the preferences. These preferences may include, for example, dietary needs, language of choice for the menu, and/or monetary requirements. For example, a user may indicate in the preferences that low fat items are desired. Also, the user may have a preference for items that cost less

than a certain amount, such as seven dollars. With this preference information, server process **410** may generate a customized menu for a particular user. The preselected orders also may form a basis for generating customized menu options. Further, a history of previously placed orders also may be stored with preferences **414** and **418**. This information also may be sent to server process **410** for use in further customizing menu options.

Additionally, the menu may be customized based on the current availability of items. In this manner, menus are dynamically created for different users based on user preferences, such as preferences **414** and **418**.

Charge information in preferences **414** and preferences **418** may take various forms. For example, this charge information may include a credit card number, customer name, expiration date for the credit card account, or a frequent diner club account number.

When a user places an order through wireless client **412** or wireless client **416** this order is processed through server process **410**. In this illustrative example, a user with wireless client **412** places an order from a table or pick-up counter within the restaurant in hot spot location **400**. Another user with wireless client **416** places an order in a pick-up lane outside of the restaurant in hot spot location **406**.

After the order has been placed server process **410** returns an order number to the user, depending on the implementation. When the order is ready, the order number may be announced and the user may pick up the order. In some cases, the configuration of the

restaurant's ordering process may not require an order number to be returned to the user.

In this example, the user at wireless client **412** receives the order at a table. The user with wireless client **416** drives through the pick-up window to pick up the order.

After the order has been picked up, the user is charged for the food ordered. This billing or charging to the user is performed with the charge information located in preferences **414** and **418**. In this manner, the user may be billed without spending time exchanging cash or spending time signing a credit card receipt. Further, this mechanism allows a user to make a "usual order" stored in a set of preferences without having to tell a person at the restaurant each item in the order. Also, the mechanism of the present invention allows for dynamic generation of menus that are customized based on user preferences. This mechanism of the present invention allows for a more efficient ordering system because less manual keying in or writing down of the orders by an employee is required, since the orders are directly entered into the ordering system of the restaurant. Additionally, wait time spent in exchanging cash or signing receipts is avoided.

Further, server process **410** may return a receipt and other information to the wireless client in an electronic form. Charge information may be placed in a form for use by an expense account program or a financial management program. In this manner, a user may receive information for use in obtaining reimbursements or for budgeting

purposes. Additionally, information about the items ordered may be placed in a format for use by a meal planning program. This information may include, for example, the number of calories for each item, the number of grams of fat for each item, the number of grams of carbohydrates for each item, as well as other nutritional information.

Turning now to **Figure 5**, a flowchart of a process for ordering food in a restaurant using a wireless client is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 5** may be implemented in a server process such as server process **410** in **Figure 4**.

The process begins by detecting a wireless connection (step **500**). The wireless connection occurs when the wireless device is within proximity of a hot spot, such that a communications link may be established with the hot spot.

Thereafter, a determination is made as to whether user preferences are received from the wireless client (step **502**). A receipt of these preferences indicates that the user is ready to place an order in these illustrative examples. If the user preferences are received from the wireless client, an order is then placed for the user from the user preferences (step **504**). An order number is sent to the wireless client (step **506**).

Thereafter, the user is billed using the charge information in the user preferences (step **508**). Then an electronic receipt is returned to the wireless client

(step **510**) with the process terminating thereafter. Additionally, other information, such as nutritional information may be returned with the receipt in step **510**.

With reference again to step **502**, if user preferences are not received from the wireless client, it is assumed that the user needs information to place an order. As a result, a dialogue process is initiated to set the user preferences (step **512**). This dialogue may include, for example, sending menu information to the wireless client to allow the user to select items for order information to set the user preferences.

Turning next to **Figure 6**, a flowchart of a process for ordering food using a wireless client is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 6** may be implemented in a wireless client, such as wireless client **412** in **Figure 4**.

The process begins by detecting a wireless connection (step **600**). The wireless connection occurs when the wireless client is in a hot spot location and the user initiates contact with the hot spot. Order information is received (step **602**). This order information is received as part of a dialogue process to set user preferences. This order information may include a set of menus to select items to be ordered. This order information is displayed to the user on the wireless client (step **604**).

Thereafter, user input is received (step **606**). Next, a determination is made as to whether the user input selects an item from the order information (step

608). If the user input selects an item, this item is placed into the user preferences (step 610) with the process then returning to step 606.

With reference again to step 608, if the user input does not select an item, a determination is made as to whether the user input enters or includes charge information (step 612). If the user input enters or includes charge information, this charge information is placed in the user preferences (step 614) with the process returning to step 606 as described above. Otherwise, a determination is made as to whether the user input indicates whether the user has finished setting preferences (step 616). If the user input does not indicate that the user has finished, the process returns to step 606.

Otherwise, a determination is made as to whether to place an order (step 618). If the order is to be placed, the user preferences are sent to the server process for the restaurant (step 620) with the process terminating thereafter. On the other hand, if an order is not to be placed, the process terminates without sending the user preferences.

This process also may be used to send a set of previously stored user preferences for a order regularly made by the user. In this case, the user input in step 606 would indicate that the user is finished and then the order from the user preferences and the charge information stored in the wireless client are sent to server process 410 in Figure 4.

Turning now to **Figure 7**, a flowchart of a process for generating menus from user preferences is depicted in accordance with a preferred embodiment of the present invention. The process illustrated in **Figure 7** may be implemented in a server process, such as server process **410** in **Figure 4**.

The process begins by receiving user preferences (step **700**). These preferences may be received from a client, such as wireless client **412** in **Figure 4**. These preferences are used to dynamically create a menu (step **702**). The menu created in step **702** is customized for the user based on the preferences. For example, a customer may have a preference for low fat items or for daily specials. Further, the menu also is customized based on the current availability of items at the establishment. The customized menu is then sent to the user at the wireless client (step **704**). Order information is then received (step **706**). This order information is then stored (step **708**) with the process terminating thereafter. This stored order information is then used to fill the order made by the user.

Thus, the present invention provides a method, apparatus, and computer instructions for ordering food from a restaurant using a wireless client. The mechanism of the present invention allows for order and charge information to be sent to a restaurant from a wireless client to place an order with the restaurant. This information is used to generate the order and charge the client for the food. Also, user preferences are used to dynamically generate a customized menu that is sent to

the user at the wireless client. This mechanism also allows for ordering of food with less time than that required for an order taken manually by an employee of the restaurant. Further, the transfer of cash is not required, so that the same amount of work may be performed with fewer employees.

It is important to note that while the present invention has been described in the context of a fully functioning data processing system, those of ordinary skill in the art will appreciate that the processes of the present invention are capable of being distributed in the form of a computer readable medium of instructions and a variety of forms and that the present invention applies equally regardless of the particular type of signal bearing media actually used to carry out the distribution. Examples of computer readable media include recordable-type media, such as a floppy disk, a hard disk drive, a RAM, CD-ROMs, DVD-ROMs, and transmission-type media, such as digital and analog communications links, wired or wireless communications links using transmission forms, such as, for example, radio frequency and light wave transmissions. The computer readable media may take the form of encoded formats that are decoded for actual use in a particular data processing system.

The description of the present invention has been presented for purposes of illustration and description, and is not intended to be exhaustive or limited to the invention in the form disclosed. Many modifications and variations will be apparent to those of ordinary skill in

the art. The embodiment was chosen and described in order to best explain the principles of the invention, the practical application, and to enable others of ordinary skill in the art to understand the invention for various embodiments with various modifications as are suited to the particular use contemplated.